WHAT IS CLAIMED IS:

1. A substantially pure conopeptide or pharaceutically acceptable salt thereof, said conopeptide having the general formula I: Xaa_1-Cys-Xaa_2-Cys-Xaa_3-Xaa_4-Cys-Cys-Xaa_5-Cys-Xaa_6-Cys-Xaa_7 (SEQ ID NO:1), wherein Xaa_1 is des-Xaa_1 or a peptide having 1-6 amino acids; Xaa_2 is a peptide having 5-6 amino acids; Xaa_3 is a peptide having 4 amino acids; Xaa_4 is Glu, γ-carboxyglutamic acid (γ-Glu) or Gln; Xaa_5 is a peptide having 3-4 amino acids; Xaa_6 is a peptide having 3-6 amino acids; and Xaa_7 is des-Xaa_7 or a peptide having 2-9 amino acids, with the proviso that when Xaa_1 is des-Xaa_1, then Xaa_5 is not the tripeptide Ser-Asp-Asn.

2. The conopeptide of claim 1, wherein Xaa_4 is γ-Glu.

3. The conopeptide of claim 1, wherein each Xaa_1 is des-Xaa_1.

4. The conopeptide of claim 1, wherein Xaa_1 is a peptide having 1-6 amino acids.

5. The conopeptide of claim 1, wherein Xaa_7 is des-Xaa_7.

6. The conopeptide of claim 1, wherein Xaa_7 is a peptide having 2-9 amino acids.

7. A substantially pure conopeptide or pharmaceutically acceptable salt thereof, said conopeptide having the general formula II: Xaa_1-Cys-Xaa_2-Cys-Xaa_3-Xaa_4-Cys-Cys-Xaa_5-Xaa_6-Cys-Xaa_7-Cys-Xaa_8 (SEQ ID NO:2), wherein Xaa_1 is des-Xaa_1 or a peptide having 1-6 amino acids; Xaa_2 is a peptide having 5-6 amino acids; Xaa_3 is a peptide having 4 amino acids; Xaa_4 is Glu,γ-carboxyglutamic acid (γ-Glu) or Gln; Xaa_5 is Ser or Thr; Xaa_6 is a peptide having 2-3 amino acids; Xaa_7 is a peptide having 3-6 amino acids; and Xaa_8 is des-Xaa_8 or a peptide having 2-9 amino acids, with the proviso that when Xaa_1 is des-Xaa_1 and Xaa_5 is Ser, then Xaa_6 is not the dipeptide Asp-Asn.

8. The conopeptide of claim 7, wherein Xaa_4 is γ-Glu.

9. The conopeptide of claim 7, wherein each Xaa_1 is des-Xaa_1.

10. The conopeptide of claim 7, wherein Xaa_1 is a peptide having 1-6 amino acids.

11. The conopeptide of claim 7, wherein Xaa_5 is Ser or Thr.

12. The conopeptide of claim 7, wherein Xaa_8 is des-Xaa_8.

13. The conopeptide of claim 1, wherein Xaa_8 is a peptide having 2-9 amino acids.

14. A substantially pure conopeptide or pharmaceutically acceptable salt thereof, said conopeptide having the general formula III: Xaa_1-Cys-Xaa_2-Cys-Xaa_3-Xaa_4-Cys-Cys-Ser-Asn-Ser-Cys-Asp-Xaa_5-Cys-Xaa_6 (SEQ ID NO:3), wherein Xaa_1 is a peptide having 1-6 amino acids; Xaa_2 is a hexapeptide; Xaa_3 is a peptide having 4 amino acids; Xaa_4 is Glu or γ-carboxyglutamic acid (γ-Glu); Xaa_5 is a tripeptide; and Xaa_6 is a peptide having 7-9 amino acids.

15. The conopeptide of claim 14, wherein Xaa_3 is γ-Glu.

16. A substantially pure conopeptide or pharmaceutically acceptable salt thereof, said conopeptide having the general formula IV: Xaa_1-Cys-Xaa_2-Cys-Xaa_3-Xaa_4-Xaa_5-Cys-Cys-Ser-Asn-Ser-Cys-Asp-Xaa_6-Cys-Xaa_7 (SEQ ID NO:4), wherein Xaa_1 is a peptide having 1-6 amino acids; Xaa_2 is a hexapeptide; Xaa_3 is Ser or Thr; Xaa_4 is a tripeptide; Xaa_5 is Glu or γ-carboxyglutamic acid (γ-Glu); Xaa_6 is a tripeptide; and Xaa_7 is a peptide having 7-9 amino acids.

17. The conopeptide of claim 16, wherein Xaa_4 is γ-Glu.

18. A substantially pure conopeptide or pharmaceutically acceptable salt thereof, said conopeptide having the general formula V: Xaa_1-Xaa_2-Cys-Xaa_3-Xaa_4-Phe-Xaa_5-Cys-Thr-Xaa_6-Ser-Xaa_7-Cys-Cys-Ser-Asn-Ser-Cys-Asp-Gln-Thr-Tyr-Cys-Xaa_8-Leu-Xaa_9 (SEQ ID NO:5), wherein Xaa_1 is des-Xaa_1 or a dipeptide; Xaa_2 is Asp, Glu or γ-carboxyglutamic acid (γ-Glu); Xaa_3 is a dipeptide; Xaa_4 is Trp or 6-bromo-Trp; Xaa_5 is a dipeptide; Xaa_6 is a dipeptide; Xaa_7 is Glu or γ-Glu; Xaa_8 is any amino acid; and, Xaa_9 is a pentapeptide.

19. The conopeptide of claim 18, wherein Xaa_5 is γ-Glu.

20. A substantially pure conopeptide selected from the group consisting of:

(a) PnVIIA: Asp-Cys-Thr-Ser-Xaa_1-Phe-Gly-Arg-Cys-Thr-Val-Asn-Ser- Xaa_2-Cys-Cys-Ser-Asn-Ser-Cys-Asp-Gln-Thr-Tyr-Cys-Xaa_2-Leu-Tyr-Ala-Phe-Xaa_3-Ser (SEQ ID NO:6);

(b) Tx6.4: Xaa_1-Leu-Xaa_2-Cys-Ser-Val-Xaa_1-Phe-Ser-His-Cys-Thr-Lys-Asp-Ser-Xaa_2-Cys-Cys-Ser-Asn-Ser-Cys-Asp-Gln-Thr-Tyr-Cys-Thr-Leu-Met-Xaa_3-Xaa_3-Asp-Xaa_1 (SEQ ID NO:7);

(c) Tx6.9: Xaa_1-Xaa_1-Arg-Xaa_1-Gly-Gly-Cys-Met-Ala-Xaa_1-Phe-Gly-Leu-Cys-Ser-Arg-Asp-Ser-Xaa_2-Cys-Cys-Ser-Asn-Ser-Cys-Asp-Val-Thr-Arg-Cys-Xaa_2-Leu-Met- Xaa_3-Phe-Xaa_3-Xaa_3-Asp-Xaa_1 (SEQ ID NO:8);

(d) J010: Cys-Lys-Thr-Try-Ser-Lys-Try-Cys-Xaa_2-Ala-Asp-Ser-Xaa_2-Cys-Cys-Thr-Xaa_2-Gln-Cys-Val-Arg-Ser-Tyr-Cys-Thr-Leu-Phe (SEQ ID NO:9);

(e) Tx6.6: Asp-Xaa_1-Xaa_1-Asp-Asp-Gly-Cys-Ser-Val-Xaa_1-Gly-Xaa_3-Cys-Thr-Val-Asn-Ala-Xaa_2-Cys-Cys-Ser-Gly-Asp-Cys-His-Xaa_2-Thr-Cys-Ile-Phe-Gly-Xaa_1-Xaa_2-Val (SEQ ID NO:10);

(f) Tx6.5: Gly-Met-Xaa_1-Gly-Xaa_2-Cys-Lys-Asp-Gly-Leu-Thr-Thr-Cys-Leu-Ala-Xaa_3-Ser-Xaa_2-Cys-Cys-Ser-Xaa_2-Asp-Cys-Xaa_2-Gly-Ser-Cys-Thr-Met-Xaa_1 (SEQ ID NO:11);

(g) Gm6.7: Xaa_2-Cys-Arg-Ala-Xaa_1-Tyr-Ala-Xaa_3-Cys-Ser-Xaa_3-Gly-Ala-Gln-Cys-Cys-Ser-Leu-Leu-Met-Cys-Ser-Lys-Ala-Thr-Ser-Arg-Cys-Ile-Leu-Ala-Leu(SEQ ID NO:12);

(h) Mr6.1: Asn-Gly-Gln-Cys-Xaa_2-Asp-Val-Xaa_1-Met-Xaa_3-Cys-Thr-Ser-Asn-Xaa_1-Xaa_2-Cys-Cys-Ser-Leu-Asp-Cys-Xaa_2-Met-Tyr-Cys-Thr-Gln-Ile (SEQ ID NO:13);

(i) Mr6.2: Cys-Gly-Gly-Xaa_1-Ser-Thr-Tyr-Cys-Xaa_2-Val-Asp-Xaa_2-Xaa_2-Cys-Cys-Ser-Xaa_2-Ser-Cys-Val-Arg-Ser-Tyr-Cys-Thr-Leu-Phe (SEQ ID NO:14); and

(j)Mr6.3: Asn-Gly-Gly-Cys-Lys-Ala-Thr-Xaa_1-Met-Ser-Cys-Ser-Ser-Gly-Xaa_1-Xaa_2-Cys-Cys-Ser-Met-Ser-Cys-Asp-Met-Try-Cys (SEQ ID NO:15),

wherein Xaa_1 is Trp or 6-bromo-Trp; Xaa_2 is Glu or γ-carboxyglutamic acid (γ-Glu); and Xaa_3 is Pro or hydroxy-Pro (Hyp).

21. The conopeptide of claim 20, wherein Xaa_2 is γ-Glu.

22. The conopeptide of claim 20, wherein Xaa_2 is Glu.

23. The conopeptide of claim 20, wherein Xaa_3 is Hyp.

24. The conopeptide of claim 20, wherein Xaa_3 is Pro.

25. The conopeptide of claim 20, wherein Xaa_1 is Trp.

26. The conopeptide of claim 20, wherein Xaa_1 is 6-bromo-Trp.

27. The conopeptide of claim 20, wherein the conopeptide is PnVIIA and wherein Xaa_1 is Trp, Xaa_2 is γ-Glu, Xaa_3 is Hyp and the C-terminus has a free carboxyl group.

28. The conopeptide of claim 20, wherein the conopeptide is Tx6.4 and wherein Xaa_1 is Trp, Xaa_2 is γ-Glu, Xaa_3 is Hyp and the C-terminus has a free carboxyl group.

29. The conopeptide of claim 20, wherein the conopeptide is Tx6.9 and wherein Xaa_1 is Trp, Xaa_2 is γ-Glu, Xaa_3 is Hyp and the C-terminus has a free carboxyl group.

30. The conopeptide of claim 20, wherein the conopeptide is Tx6.6 and wherein Xaa_1 is Trp, Xaa_2 is γ-Glu, Xaa_3 is Hyp and the C-terminus has a free carboxyl group.

31. The conopeptide of claim 20, wherein the conopeptide is Tx6.5 and wherein Xaa_1 is Trp, Xaa_2 is γ-Glu, Xaa_3 is Hyp and the C-terminus has a free carboxyl group.

32. The conopeptide of claim 20, wherein the conopeptide is J010 and wherein Xaa_2 is γ-Glu and the C-terminus is amidated.

33. The conopeptide of claim 20, wherein the conopeptide is Gm6.7 and wherein Xaa_1 is Trp, Xaa_2 is γ-Glu, Xaa_3 is Hyp and the C-terminus has a free carboxyl group.

34. The conopeptide of claim 20, wherein the conopeptide is Mr6.1 and wherein Xaa_1 is Trp, Xaa_2 is γ-Glu, Xaa_3 is Hyp and the C-terminus is amidated.

35. The conopeptide of claim 20, wherein the conopeptide is Mr6.2 and wherein Xaa_1 is Trp, Xaa_2 is γ-Glu and the C-terminus is amidated.

36. The conopeptide of claim 20, wherein the conopeptide is Mr6.3 and wherein Xaa_1 is Trp, Xaa_2 is γ-Glu and the C-terminus is amidated.

37. An isolated nucleic acid selected from the group consisting of:

(a) a nucleic acid encoding a Tx6.4 propetide having the amino acid sequence set forth in SEQ ID NO:17;

(b) a nucleic acid encoding a Tx6.9 propetide having the amino acid sequence set forth in SEQ ID NO:19;

(c) a nucleic acid encoding a J0104 propetide having the amino acid sequence set forth in SEQ ID NO:21;

(d) a nucleic acid encoding a Tx6.6 propetide having the amino acid sequence set forth in SEQ ID NO:23;

(e) a nucleic acid encoding a Tx6.5 propetide having the amino acid sequence set forth in SEQ ID NO:25;

(f) a nucleic acid encoding a Gm6.7 propetide having the amino acid sequence set forth in SEQ ID NO:27;

(g) a nucleic acid encoding an Mr6.1 propetide having the amino acid sequence set forth in SEQ ID NO:29;

(h) a nucleic acid encoding an Mr6.2 propetide having the amino acid sequence set forth in SEQ ID NO:31;

(i) a nucleic acid encoding an Mr6.3 propetide having the amino acid sequence set forth in SEQ ID NO:33; and

(j) a nucleic acid encoding a Tx6.1 propetide having the amino acid sequence set forth in SEQ ID NO:35.

38. The nucleic acid of claim 37 encoding a Tx6.4 propetide, said nucleic acid having a sequence set forth in SEQ ID NO:16, or complement thereof.

39. The nucleic acid of claim 37 encoding a Tx6.9 propetide, said nucleic acid having a sequence set forth in SEQ ID NO:18, or complement thereof.

40. The nucleic acid of claim 37 encoding a J010 propetide, said nucleic acid having a sequence set forth in SEQ ID NO:20, or complement thereof.

41. The nucleic acid of claim 37 encoding a Tx6.6 propetide, said nucleic acid having a sequence set forth in SEQ ID NO:22, or complement thereof.

42. The nucleic acid of claim 37 encoding a Tx6.5 propetide, said nucleic acid having a sequence set forth in SEQ ID NO:24, or complement thereof.

43. The nucleic acid of claim 37 encoding a Gm6.7 propetide, said nucleic acid having a sequence set forth in SEQ ID NO:26, or complement thereof.

44. The nucleic acid of claim 37 encoding an Mr6.1 propetide, said nucleic acid having a sequence set forth in SEQ ID NO:28, or complement thereof.

45. The nucleic acid of claim 37 encoding an Mr6.2 propetide, said nucleic acid having a sequence set forth in SEQ ID NO:30, or complement thereof.

46. The nucleic acid of claim 37 encoding an Mr6.3 propetide, said nucleic acid having a sequence set forth in SEQ ID NO:32, or complement thereof.

47. The nucleic acid of claim 37 encoding a Tx6.1 propetide, said nucleic acid having a sequence set forth in SEQ ID NO:34, or complement thereof.